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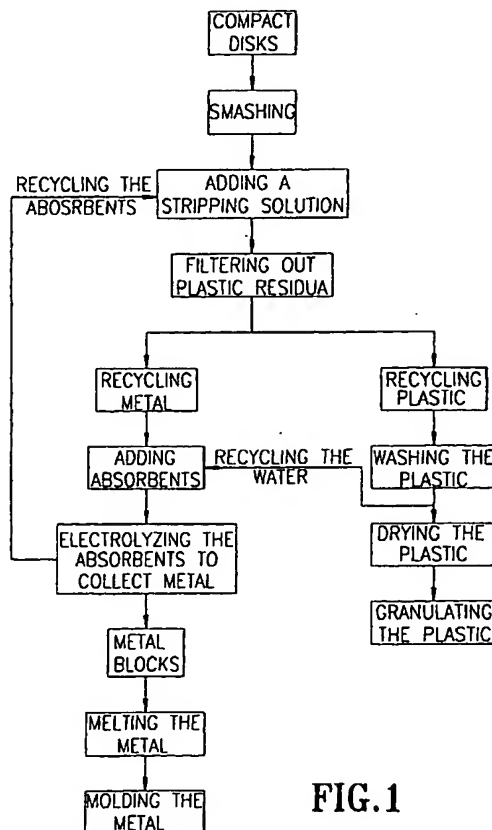
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**(54) Method for recycling compact disks**

(57) A method for recycling compact disks uses a stripping solution to separate metal from compact disks after smashing the compact disks into pieces. The stripping solution is filtered, and the metal is separated from the stripping solution by absorbents. Then, the absorbents electrolyzed to recover the metal in the absorbents. Other solid residua of the compact disk, plastic pieces, are washed, dried and granulated into plastic particles. Whereby, the compact disks are completely recycled.



**FIG.1**

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## Description

### 1. Field of the Invention

[0001] The present invention relates to a method for recycling compact disks, and more particularly to a method for recycling compact disks to separate the compact disks into separate plastic and metal resources for reprocessing.

### 2. Description of Related Art

[0002] Compact disks have become a major recording medium in the recording industry. To a significant extent compact disks have replaced the audiotapes or videotapes because the compact disks have a huge memory storage capacity, retain the stored recording longer and provide better quality of sound and picture than the conventional magnetic recording media. Each compact disk is composed of a hard plastic disk and a metal recording layer of aurum, silver or aluminum formed on one side of the plastic disk and is cheap to produce. Although the compact disks retain the stored recording longer than the conventional magnetic recording media, compact disks are easily damaged when the metal layer is scratched, abraded or otherwise damaged to cause gaps or breaks in the memory area on the metal layer.

[0003] As compact disks have become more popular and more common, more and more compact disks are inevitably discarded. The discarded compact disks pose a serious environmental problem that is tough to deal with. If the compact disks are discarded without any treatment, the heavy metal in the metal layer leaches into the soil and the water causing pollution to our environment and a potentially serious health hazard. Furthermore, since the plastic and metal in the compact disks are reusable, discarding the compact disks without any treatment is a waste of resources.

[0004] The present invention provides a method for recycling compact disks to obviate the aforementioned problems.

[0005] The main objective of the invention is to provide a method for recycling compact disks to separate the materials used in compact disks into reusable plastic and metal.

[0006] Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

### IN THE DRAWINGS

[0007] Fig. 1 is a schematic diagram of a method for recycling compact disks in accordance with the present invention.

[0008] With reference to Fig. 1, a method for recycling compact disks composed of a plastic disk and metal in accordance with the present invention comprises the

following acts.

[0009] Smashing: smashing the compact disks into pieces.

[0010] Adding a stripping solution: the pieces of compact disks are put into a container of stripping solution (reagents for stripping the metal layer from the compact disks) to dissolve the metal in the metal layer from the compact disks into the stripping solution. Residua of the compact disks are plastic pieces suspended in an upper layer of the stripping solution.

[0011] Filtering out the plastic residua: the stripping solution is filtered to separate the plastic pieces from the stripping solution that contains the metal.

[0012] Recycling the metal: the stripping solution containing the metal is mixed with absorbents to undergo an ion exchange reaction to separate the metal from the stripping solution. Then the absorbents are electrolyzed to coat the metal material on a negative electrode to obtain a pure metal. The pure metal is collected, melted and molded into a block of metal. Additionally, the stripping solution after undergoing ion exchange reaction is poured into the container to dissolve the material from additional pieces of the compact disks.

[0013] Recycling the plastic: the plastic pieces are washed with water, dried and then granulated into plastic particles. The water used to wash the pieces of plastic also contains a trace of metal. Therefore, the water is mixed with the absorbents for recycling the metal and then reused.

[0014] Based on the foregoing description of the method for recycling compact disks in accordance with the present invention, the following advantages exist.

1. The compact disks are recycled to reduce amount of trash and prevent metal in the compact disks from leaching into and polluting the soil and water in our environment.

2. The whole compact disk is recycled into reusable metal and the plastic. All the elements of the compact disks are recovered for reuse.

3. The stripping solution and water are also recycled to prevent wasting resources and causing other pollution.

[0015] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

### Claims

1. A method for recycling compact disks composed of

plastic base plates and metal material, the method comprising following acts:

smashing: smashing the compact disks into pieces; 5  
adding a stripping solution: mixing the pieces of compact disks with a stripping solution to dissolve the metal from the pieces of compact disks into the stripping solution, wherein residua of the compact disks are plastic pieces; 10  
filtering out the plastic residua: filtering the stripping solution to separate the plastic pieces and stripping solution containing metal;  
recycling the metal: mixing the stripping solution containing metal with absorbents to undergo an ion exchange reaction to separate the metal from the stripping solution, the absorbents containing metal are electrolyzed to coat solid metal on a negative electrode; and 15  
recycling the plastic: washing the plastic pieces with water, drying and granulating the plastic material into particles. 20

2. The method for recycling compact disks as claimed in claim 1, wherein the solidified metal is collected, melted and molded into a metal block; and the stripping solution is reused to remove metal from additional pieces of compact disks. 25
3. The method for recycling compact disks as claimed in claim 1, the waste water from washing the plastic pieces is mixed with the absorbents for recycling the metal and then reused. 30

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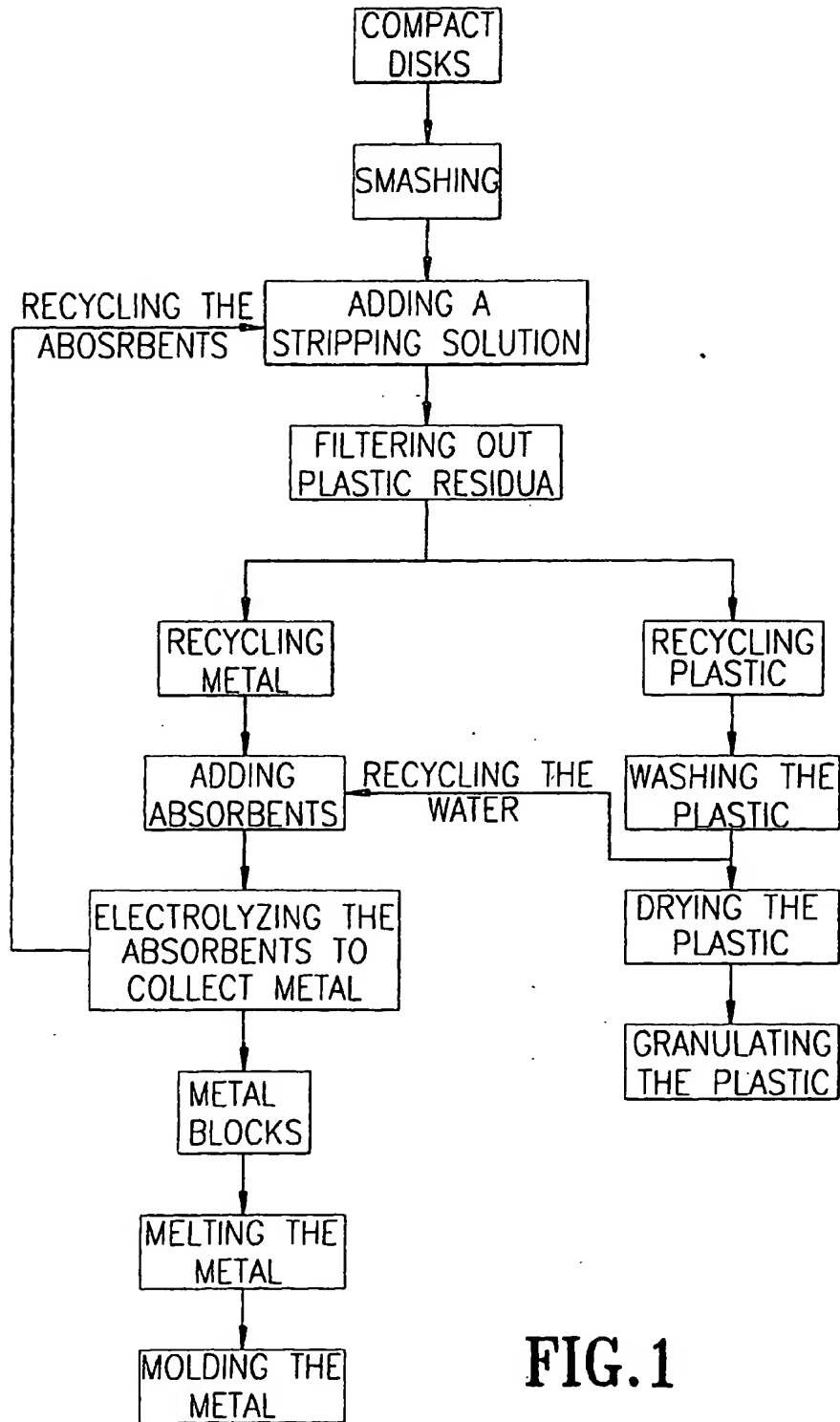


FIG.1

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EUROPEAN SEARCH REPORT

Application Number  
EP 02 01 3230

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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 30 July 2002	Examiner Kofoed, J
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 02 01 3230

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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